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Tugas | GrafKom4

1. Diketahui titik awal P (1,1) dan titik akhir di Q (10,10), dengan cara area clipping xmin = 1, ymin=1, xmax=7 dan ymax=7. Selesaikan masalah ini dengan clipping cohensutherland
   Jawab:
   P (1,1)
   L = 0, $1 \geq$ x min
   R = 0, $1 \leq$ x max
   B = 0, $1 \geq$ y min
   T = 0, $1 \leq$ y min

   Region code P adalah 0000
   Q (10,10)
   L = 0, $10 \geq$ x min
   R = 1, $10 >$ x max
   B = 0, $10 \geq$ y min
   T = 1, $10 >$ y max

   Region code 0101
   Karena region code dari salah satu vertex P dan Q yang region codenya tidak 0000 maka garis PQ bersifat PARTIALY VISIBLE sehingga garis perlu dipotong.
   Titik potong garis PQ
   Region code Q adalah 0101, R = 1 dan T = 1

   $$m = \frac{y_2 - y_2}{x_1 - x_2} = \frac{10 - 1}{10 - 1} = \frac{9}{9} = 1$$

   R = 1 → y_{p2} → y_1 + m * (x max - x_1)
   1 + 1(10 – 1)
   2 + 9
   11
   Maka titik potongnya (xmax, y_{p2}) → (10,11)
   T = 1

   $$m = \frac{y_2 - y_2}{x_1 - x_2} = \frac{10 - 1}{10 - 1} = \frac{9}{9} = 1$$

   T = 1 → $x_{p1} = x_1 + \frac{y_{min} - y_1}{m}$

   $$= 1 + \frac{1-1}{1} = \frac{1+0}{1}$$

   $$= \frac{1}{1} = 1 \rightarrow x_{p1} = 1$$

Maka titik potongnya adalah (x_{p1} ,ymin) = (1,1)

2. Berdasarkan soal no.1 lakukan clipping menggunakan alogaritma Liang-Barsky dimana xl=1, xr=7, yb = 1, yt= 1
Jawab :

Diket:

- xl=1
- xr=7
- yb = 1
- yt= 1
- $P = (1, 1)$
- $Q = (10, 10)$

Dijawab:

$\rightarrow dx = x_2 - x_1$
$= 10 - 1 = 9$
$\rightarrow dy = y_2 - y_1$
$= 10 - 1 = 9$

$P_1 = -dx = -9$ $\quad Q_1 = x_1 - xl = 1 - 1 = 0$
$P_2 = dx = 9$ $\quad Q_2 = xr - x_1 = 7 - 1 = 6$
$P_3 = -dy = -9$ $\quad Q_3 = y_1 - yb = 1 - 1 = 0$
$P_4 = dy = 9$ $\quad Q_4 = yt - y_1 = 7 - 1 = 6$

- $\frac{Q_1}{P_1} = \frac{0}{-9} = 0$
- $\frac{Q_2}{P_2} = \frac{6}{9} = \frac{2}{3}$
- $\frac{Q_3}{P_3} = \frac{0}{-9} = 0$
- $\frac{Q_4}{P_4} = \frac{6}{9} = \frac{2}{3}$
- Untuk ($P_1 < 0 > T_1$ = "max" (0,00)
  $= 0$
- Untuk ($P_1 > 0 > T_2$ = "min" $\left(\frac{2}{3}, \frac{2}{3}, 1\right)$
  $= \frac{2}{3}$

$T_1 < T_2$

- $T_1 = 0$

  $X_1 = x_1 + dx(T_1)$

  $= 1 + 9(0) = 1$

  $Y_1 = y_1 + dy(T_1)$

  $= 1 + 9(0) = 1$

  $(x_1, y_1) \rightarrow (1, 1)$
- $T_2 = 2/3$

  $X_2 = x_2 + dx(T_2)$

  $= 1 + 9(2/3) = 7$

  $Y_2 = y_2 + dy(T_2)$

  $= 1 + 9(2/3) = 7$

  $(x_2, y_2) \rightarrow (7, 7)$